WEPS1.0 Quick Reference

Minimum Computer Requirements
PC with Windows 95/98/NT; 150 MHz; 48 Mb RAM; 50 Mb free disk space on the hard drive; a CR-ROM drive; VGA color monitor. Contact WERU if you need assistance.

Installation
Insert the WEPS1.0 CD into the CD-ROM drive. Click [Start] [Run] and enter {w:/setup} where "w" represents the drive letter for your CD-ROM drive. Follow the instructions on the screen. Contact WERU if you need assistance. NOTE: See "readme" file for up-to-date installation instructions for this CD-ROM.

Running WEPS1.0
Double left click on the Weps1.0 icon on the desktop. You will briefly see the Weps1.0 'Splash' window, then the WEPS1.0 main window will appear.

A Simple Simulation

WEPS1.0 needs only four types of information to make a simulation run. To make a simple simulation run, you need to:

1. Describe the simulation field geometry.
   a. Select the field dimensions.
      i. Click on the brown field shape (ie, simulation region) in the center panel of the window.
      ii. Click the 'Resize' button  on the toolbar.
      iii. Click and hold the left mouse button on the "handles" along the field border.
      iv. Drag each border to obtain the desired field dimensions (ie. X-Length, Y-Length) as shown in the 'Simulation Region Info' box in the left panel or you may enter the specific field dimensions on the left panel.

   b. Select field orientation.
      i. Click on the 'Rotate' button  on the toolbar at the top of the window.
      ii. By placing the mouse cursor within the circle in the simulation region, drag the mouse to rotate the field to the desired orientation or you may enter the specific field orientation on the left panel.
      iii. Click the left mouse button to 'fix' the field orientation.
      iv. Finally, click the 'select' button  to close the rotation option.

2. Select a field location (for weather files).
   a. In the right panel of the window which is labeled 'Location Info', use the mouse to select a State and County from the drop down menus  . The closest weather stations to the center of the selected county will be loaded.

3. Select a management scenario.
   a. In the bottom panel of the window which is labeled 'Management:', use the mouse to select a

management crop rotation from the drop down menu .

4. Select a soil.
   a. In the bottom panel of the window which is labeled 'Soil:', use the mouse to select a soil from the drop down menu .

Once these four items are complete, click the 'Run' button on the tool bar at the top of the screen. You will then see indicators that WEPS1.0 is running. When the simulation run is finished, the output screen will appear. If WEPS encounters an error during a simulation run, a screen appears ('Report a bug') which allows you to send a bug report to WERU. You are prompted to enter your e-mail address and a short message. If you are connected to the internet at the time of the error, clicking 'OK' will e-mail the report to WERU along with all files necessary to duplicate the error so that it can be fixed.

More Complex Simulation Runs

In this section we will discuss how to modify or add to the four types of simulation information discussed above under "A Simple Simulation". This will allow more complex simulations and will allow the user to "fine tune" input parameters.

Client and Field Information

This information can be entered in the boxes near the upper part of the left panel (below the button bar). Although these items are not necessary for a simulation run, This information is intended to help the user identify a simulation run and can be attached to the output information for a simulation run. Enter the 'Client Name' and 'Field ID' in the boxes if desired.

Describing the field geometries.

Changing the field shape and orientation on the center panel screen were discussed above. Note that as these items are changed using the mouse to drag boundaries and orientation, the values are also changed in the 'Simulation Region Info' section in the left screen panel. The user may bypass using the mouse to drag the field boundaries and orientation by directly entering the X-Length, Y-Length, and Orientation information in the 'Simulation Region Info" box. Note that strip cropping can be simulated by narrowing the field to the width of the strip and adding an appropriate barrier to simulate the alternating strip.

Barriers

The current version of WEPS1.0 only allows barriers along the four field boundaries. To add a barrier, click the 'Add Barrier' button in the left panel and move the mouse cursor over the field shape in the center panel. You will see a green bar, representing a barrier on that side of the field. Click the barrier to "fix" it to the desired side of the field. Once fixed, you can adjust the barrier width and select the barrier type and enter the barrier porosity and height in the left panel. Clicking again on the 'Add Barrier' button will allow the addition of barriers on the other field borders as desired.

Location Info.

This information is entered through the rightmost panel on the window. This information is used to select the weather files for the simulation. Clicking on the 'Use Map' button brings up a map of the U.S. Clicking the check boxes in the left side of the map window will display CLIGEN stations, WINDGEN stations, county lines

(must be zoomed at 400% or greater), and major cities on the map. The map can be 'zoomed' in or out by selecting a % magnification from the list in the box at the bottom of the screen. Double clicking a location will select the nearest CLIGEN and WINDGEN station. An alternative to using the map is to directly select the state and county of interest from the drop down list. A list of the CLIGEN and WINDGEN stations nearest to the center of the county is generated from which the user can choose the weather stations to use for the simulation run.

Management

Management scenarios can be selected from a pre-generated list of crop rotations. To do this, click the down arrow on the management box which is located in the bottom panel of the WEPS1.0 window. Double clicking on the 'folder', on the left side of the management box, will bring up the management crop rotation editor, which allows the user to modify management scenarios and save them to other file names.

Soil

Soil for a simulation run can be selected from a pre-generated list. To do this, click the down arrow on the soil box which is located in the bottom panel of the WEPS1.0 window. Double clicking on the 'folder', on the left side of the soil box, will bring up the soil editor, which allows the user to modify soil parameters and save them to other file names.

Project Files

The four types of information required by WEPS1.0 as mentioned above, can be saved in what is known as a 'Project'. A Project saves all of the inputs and information needed to reproduce a simulation run. Once the information has been entered a Project file is saved by clicking [File] and [Save As] at the top of the WEPS1.0 window. The user should then enter a project name with a prj extension (i.e., *.prj). These saved files can then be recalled later for modification or simulation runs by clicking [File] and [Open] and entering the appropriate project file name. To save the information on the WEPs window to the current project, simply click the save icon .

Output

Output for a simulation run will automatically display at the conclusion of a simulation. Output from previously saved runs can be displayed by clicking the 'View' button on the tool bar. Output screens for WEPS1.0 are arranged in a 'spreadsheet' fashion. Several types of output are available and can be viewed or printed by clicking on the appropriate tab (described below) at the top of the 'Output Summary" window.

<u>Wind Erosion Summary</u>

This tab screen shows a quick summary of wind erosion soil loss in terms of annual average losses. This report can be printed by clicking the 'Print this Report' button at the bottom of the screen.

<u>Output Details</u>

This tab screen displays a detailed output report with all of the major reporting information available with the current version of WEPS. A description of the information contained in each column and row is given below. Again this page can be printed by clicking the 'Print this Report' button at the bottom of the screen.

The **columns** of output have the following information.

Date - This column contains the date of the last day for which the row information is reported. Items in that row represent values from the previous period end to the current date.

Operation - This column contains the management operation which occurred on the specified date.

Field Loss

Average Total - This column contains the total soil loss for the period, averaged across the field as well as averaged over the number of simulation years in each rotation year (kg/m^2 or tons/acre).

Standard Deviation - This column contains the standard deviation of the values in the average total column (kg/m^2 or tons/acre).

Average Creep+Salt. - This column contains the total creep plus saltation loss for the period, averaged across the field grid points as well as averaged over the number of simulation years in each rotation year (kg/m^2 or tons/acre).

Average Susp. - This column contains the total suspension loss for the period, averaged across the field grid points as well as averaged over the number of simulation years in each rotation year (kg/m^2 or tons/acre).

Average PM10 - This column contains the PM10 soil loss for the period, averaged across the field grid points as well as averaged over the number of simulation years in each rotation year (kg/m^2 or tons/acre).

Mass passing Field Boundary

Creep+Saltation - These columns  contain the mass per unit length (meter) of creep and saltation size material which passed each field boundary (kg/m or tons/1000 ft).

Suspension - These columns  contain the mass per unit length (meter) of suspension size material which passed each field boundary (kg/m or tons/1000 ft).

PM10 - These columns  contain the mass per unit length (meter) of PM10 size material which passed each field boundary (kg/m or tons/1000 ft).

Weather

Average Total Precip. - This column contains the total precipitation for the period averaged over the simulation years in each rotation year (mm or inches).

Average Wind Energy - This column contains the wind energy for the period for winds greater than 8 m/s,

averaged over the simulation years in each rotation year (KJ/Period).

Average Surface Conditions on Date

Crop Vegetation (Live)

Canopy Cover - This column contains the fraction of total crop biomass cover at the period end, averaged over the simulation years for the period listed (fraction).

Standing Silhouette - This column contains the standing silhouette area index of live plants expressed on a fraction basis. These values are the standing silhouette area per area of soil surface. These are values at the period end averaged over the simulation years in each rotation year (fraction).

Above Ground Mass - This column contains the total live crop biomass of above ground, at the period end, averaged over the simulation years for the period listed (kg/m^2 or lbs/acre).

Crop Residue (Dead)

Flat Cover - This column contains the amount of flat dead cover on the soil surface expresses on a fraction basis. These are values at the period end averaged over the simulation years in each rotation year (fraction).

Standing Silhouette - This column contains the standing silhouette area index of dead plants expressed on a fraction basis. These values are the standing silhouette area per area of soil surface. These are values at the period end averaged over the simulation years in each rotation year (fraction).

Flat Mass - This column contains the amount of flat dead biomass on the soil surface. These are values at the period end averaged over the simulation years in each rotation year (kg/m^2 or lbs/acre).

Standing Mass - This column contains the amount of standing dead biomass on the soil surface. These are values at the period end averaged over the simulation years in each rotation year (kg/m^2 or lbs/acre).

Live and Dead Biomass

Flat Cover - This column contains the amount of flat cover from live and dead biomass on the soil surface expresses on a fraction basis. These are values at the period end averaged over the simulation years in each rotation year (fraction).

Standing Silhouette - This column contains the standing silhouette area index of dead plants expressed on a fraction basis. These values are the standing silhouette area per area of soil surface. These are values at the period end averaged over the simulation years in each rotation year (fraction).

Flat Mass - This column contains the amount of flat live and dead biomass on the soil surface. These are values at the period end averaged over the simulation years in each rotation year (kg/m^2 or lbs/acre).

Standing Mass - This column contains the amount of standing live and dead biomass on the soil surface. These are values at the period end averaged over the simulation years in each rotation year (kg/m^2 or lbs/acre).

Roughness Oriented

Ridge Orientation - This column contains orientation of the ridges with 0E representing north/south (degrees).

Ridge Spacing - This column contains the spacing between ridges. This is the value at the period end averaged over the simulation years in each rotation year (mm or inches).

Ridge Height - This column contains the height of ridges. This is the value at the period end averaged over the simulation years in each rotation year (mm or inches).

Random

Roughness - This column contains the standard deviation of the soil surface random roughness. This is the value at the period end averaged over the simulation years in each rotation year (mm or inches).

The **rows** in the output form vary depending on the number of rotation years and the number of management operations in each rotation year.

The first sets of rows contain values based on number of rotation years with one set of rows for each rotation year. Each rotation year has output at each management operation date as well as the fifteenth and the last day of each month. This output allows the user to view the erosion and other output on a rotation year basis. At the end of each rotation year is a row which contains the average annual value for the rotation year.

The last set of rows contain values output at the end of each month regardless of the rotation year. This output allows the user to view average values on a monthly basis for the entire simulation.

The last row in the output form contains the average annual values for the simulation run.

Wind Erosion Soil Loss

This tab screen provides a summary of all the wind erosion soil loss output for the simulation run. Note that this tab screen is actually a subset of the 'Output Details' tab screen.

Weather

This tab screen provides a summary of some of the weather inputs for the simulation run. Note that this tab screen is actually a subset of the 'Output Details' tab screen.

Average Surface Conditions on Date

This tab screen provides a summary of average surface conditions for the simulation run. Note that this tab screen is actually a subset of the 'Output Details' tab screen.

Project Summary

This tab screen provides a summary of project information for a simulation run. There is also a box at the bottom of the screen where the user may enter comments. This tab screen may be useful as a cover sheet for a wind erosion simulation report.

Menu Bar

This is the top line of the main WEPS window. A brief description of each item on the menu bar is given below.

File

This brings up a drop down list of various file operations.

Configuration

This brings up various configuration options for WEPS.

Run

This allows the user to run WEPS, view inputs for the current project, or view output for the current or other projects.

Tools

This allows the user to send e-mail comments to WERU.

Help

Detailed help for the operation of WEPS can be obtained by clicking 'Help' on the Menu Bar.

Button Bar

At the top of the main WEPS window is a series of button to help the user in the operation of WEPS. Some of these are briefly described below.

 This button allows the user to zoom in or enlarge the view of the field on the main screen. Note that this does not enlarge the field dimensions, just the view.

 This button allows the user to zoom out or shrink the view of the field on the main screen. Note that this does not shrink the field dimensions, just the view.

 This 'Zoom to Fit' button allows the user to size the view of the field to fit the main screen. Note that this does not resize the field dimensions, just the view.

 This 'Select' button allows the user to turn off a field manipulation operation such as resizing  moving  or rotating  the view of a field.

 This 'Delete' button deletes selected barriers from the field.

 This 'Resize' button allows the user to change the actual field length and width. When the button is clicked, 'handles' appear on the field borders which can be 'dragged' to resize the field dimensions. Note that as the field is resized, the X-Length and Y-Length are changed.

 This 'Move' button allows the user to move the field in the view area.

 This 'Rotate' button allows the user to rotate the field to adjust the angle of the field. By placing the mouse cursor within the circle in the simulation region, drag the mouse to rotate the field to the desired orientation.

 This 'Run' button begins a simulation run.

 This 'View' button allows the user to view the output window.

 This 'e-mail' button allows the user to e-mail comments to WERU along with the contents of the current Project, if desired.

 This 'Question' button allows the user to view the current version and release number of WEPS.

 This 'Context Help' button provides help for a particular item on the WEPS screen. Clicking the 'Context Help' button on the tool bar and then clicking on the item on the screen for which help is desired brings up a help screen for that item.

Contact Us

Because we want to provide you with the best in wind erosion prediction technology, we welcome your questions and comments.

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